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(54) Title: EXPANDABLE CONTAINER TYPE HOUSE				
(57) Abstract				
<p>A container type apparatus intended to be used as a permanent or portable house structure and comprising three house sections which can telescopically be introduced into each other, viz, a central main section (3) having a supporting bottom (6), at least two opposite sides (8) and a roof (7) and providing the supporting main section of the container house, and two side sections (4, 5) each comprising a roof (11) and three side walls (12, 13) and provided on opposite sides of the central main section (3), whereby the open side of one (4) side section is adapted to enclose the central main section (3) in the compressed state of the container house, whereas the opposite side section (5) with the open side thereof is adapted to enclose both the central main section (3) and the first mentioned side section (4) in the compressed state of the container house. The floor part (10, 10') of each side section (4, 5) is separate from the unit including walls and roof and are preferably hinge-mounted at the supporting bottom part (6) of the central main section (3) to provide an even integral floor (6, 10, 10') in the ready mounted state of the container house, whereas the said floor parts (10, 10') in the compressed state of the container house are provided fold up and secured to the outer sides of the side sections (4, 5) thereby providing a compact container house having substantially smooth protecting outer surfaces.</p>				

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Expandable Container Type House

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The present invention generally relates to a container type house structure comprising a bottom, side walls and roof and made up of three house sections which can be introduced telescopically into each other.

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The container type house is intended for being transported on a lorry, a trailer or similar vehicle and it is intended for being used as stationary or transportable residences or alternatively as offices, military buildings, canteens, schools, medical clinics, factories etc. whereby furniture and other equipment are meant to be left in the container house during transportation in the compressed state of the house.

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Transportable house structure are previously known comprising walls, roof and floor which are hinge-connected to each other and which during the transportation are collapsed to a compress pack, and which at the place of delivery are opened and are erected to a house structure. Such an apparatus, which is for instance illustrated in the Swedish Patent Publication No. 412,084, is disadvantageous in that no fixed or separate furniture or accessories can be left in the house structure during the transportation in the compressed state and in that the known house cannot without serious difficulties be equipped with electric installations and sanitary installations.

25

Another type of portable house structure which is shown in the Danish Patent 136,987 is formed with a central main section to which two side sections can be connected by folding out floor units, wall units and roof units, whereby a building having a size of about three times the transport size is obtained. Also this house type structure is disadvantageous in that the floor units, the wall units and the roof units of the side sections during the transportations are collapsed to a flat pack, and



therefore no fixed or separate furnitures or accessories can be kept in the side sections.

The above mentioned problems in part are solved by the apparatus disclosed in the French Patent 2,296,738 which shows a 5 portable house structure having three house sections which can be introduced telescopically into each other and in which a main section thereof comprises fixed structurelike sanitary installations and into which an intermediate house section can be introduced, and in turn an outer section can be introduced in the 10 said intermediate section. The different house sections are formed so that some fixed and/or separate furniture or equipment can be maintained even while the sections are being introduced into each other and are transported in the compressed state of the house structure. The French house structure further is formed 15 so that the entire house pack including the three sections can be placed on a lorry or a trailer so that the three sections can be expanded from each other in the longitudinal direction of the trailer or lorry.

Also the said French portable housing is disadvantageous in 20 some respects. Each of the three house sections which can telescopically be introduced into each other have to be formed with both floor and roof and in order to make it possible to introduce the sections into each other both the floor and the roof necessarily must be provided on different levels. The 25 expandable and ready mounted house structure therefore gets a floor positioned on three different horizontal levels what is considered a serious disadvantage. Also when mounting a house of the above mentioned type the ground has to be formed considering the different floor levels of the three house sections what can 30 be complicated and expensive. Further the handling of the known house structure what is generally made by means of a fork truck is complicated in that the fork truck must seize the house structure from a side of the lorry or the trailer, where the compressed house pack generally must be relatively narrow and 35 thereby is difficult to handle. Since the house pack is designed for being expanded in the longitudinal direction of the lorry or



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the trailer there are in addition limitations with respect to the length and the width of the type of house since the house cannot be made wider than what is allowed considering the width of the lorry and must not exceed a length for which the 5 telescopatable sections easily can be handled and introduced into each other.

The object of the invention therefore is to solve the problem of providing a container type house structure comprising bottom, side walls and roof and made up of three sections which 10 can be telescopically introduced into each other, which is designed so that the floor of all three sections extend on the same level when the house is mounted, in which all three sections can be formed with fixed and separate furniture and installations which do not prevent the telescopic introduction of the 15 sections into each other and in which the house structure can be designed with any intended length in that the telescopic actions of the house sections are made in the transversal direction of the lorry or trailer and in which consequently the erection, the expanding and the ready mounting of the house structure is made 20 quickly and simply on any plane ground.

According to the invention the container type house structure comprises a central main section which may be considered a fixed main section and which comprises service accessories like kitchen, bath, other sanitary installations 25 central electricity installations etc. and two side sections which each comprises floors, roofs and three side walls and provided on opposite sides of the central main portion, and whereby the open side of one side section is adapted to enclose the central main section in the compressed state, whereas the 30 opposite side section with the open side thereof is adapted to enclose both the central main section and the first mentioned side section in the compressed state. In a referred embodiment of the invention the floor of each side section is separate from the unit consisting of walls and roofs and is hinged mounted in the 35 central main section and is adapted to be fold up to the house structure in the compressed state of the house thereby providing



a preferably smooth protecting outer surface of the house pack.

Further characteristics of the invention and advantages thereof will be evident from the following detailed description in which reference will be made to the accompanying drawings.

5 In the drawings figure 1 is a perspective view of a house structure according to the invention while being transported on lorry. Figure 2 shows the house structure according to the invention in an early stage of the mounting operation, figure 2 shows the house structure in a later state of the mounting and 10 figure 4 shows the house structure according to the invention in the ready mounted state. Figures 5, 6 and 7 show different alternative plans of the house structure in a horizontal view. Figure 8 is a vertical cross-section of a diagrammatically 15 illustrated house structure according to the invention and figure 9 likewise is a diagrammatically view of the invention designed for mechanical mounting and ready making of the house structure.

In figure 1 the container type structure 1 is shown in the compressed transport state placed on the platform of the lorry 2. Preferably the containerhouse is designed with such dimensions 20 that at least the width of the house pack corresponds to the accepted standard widths for containers, i.e. a total transport width of 2,600 or 2,438 mm according to the ISO Standard. The house structure 1 of figure 1 is formed with smooth and plane outer surfaces, and the bottom, the roof and the front and rear 25 sides are formed by the corresponding parts of a central house section whereas the long sides are formed by folded up floors belonging to two side sections of the house structure.

As best evident from figure 4 the house structure includes 30 three house sections, viz. a central section 3 and on each side thereof a side section 4 and 5 respectively. The central house section generally comprises a bottom part 6, a roof part 7 and two short side parts 8 one of which as evident from figure 4 can be formed with a door 9. The two long sides of the central house section 3 may be open but may as well be formed with partition 35 walls providing a separate room between the two side sections 4 and 5. Each side section 4 and 5 respectively has a floor part



10, a roof part 11, two short side parts 12 and a long side part 13. All side parts 12 and 13 may have windows 14 and/or doors 15.

5 An essential feature of the invention is that the side sections 4 and 5 are designed so that they can be moved into each other over the central section 3, and that the floor parts 10 are mounted rotatably in relation to the central section 3 and can be fold up so as to provide protecting smooth outer surfaces for the long sides of the house pack.

10 In figure 2 the house pack is shown in the compressed state, and it is evident that the floor parts 10 are hinged mounted at the bottom part 6 of the central section 3. When folding one floor part 10' down as indicated with the dotted lines in figure 2 one of the side sections is relieved, for instance side section 4, and when folded down the floor part 10' takes the same level as the bottom 6 of the central section 3. 15 Therefore the side sections 4 and 5 easily can be pulled out sliding over the bottom parts 10 and 10' respectively and the ready made expandable house body gets a plane and smooth floor and can be placed on any plane ground. For instance the house 20 structure can be placed on bars 16, placed on the ground, but it may as well be placed on a concrete bedding, a sand bedding or any other suitable ground. If the house shall be used for permanent purposes it is advisable to mount the house protected from moisture, for instance on bars, on poles, on a concrete 25 bedding or the like.

In figure 8 a cross-section through the compressed house pack is diagrammatically illustrated. The figure illustrates the basic construction of the housing.

30 Preferably all elements are designed as box structures of aluminum, steel plate or any other suitable material which like a sandwich structure is filled with some insulating material like foam plastic material. At the inside the wall surfaces can be made of some decorated plywood or panelling material.

35 As evident from figure 8 the central house section comprises a bottom 6, a roof 7 and short sides 8, and it may or may not have a long side wall 17. The side walls 8 and 17 are secured to



the bottom 6 and provides a solid supporting unit. The two side sections 4 and 5 are formed with short side parts (not illustrated), long side parts 13 and 13' respectively and roof parts 11 and 11' respectively. In the compressed state the long 5 side parts 13, 13' rest on the bottom 6 of the central section 3 over sealings 18, 18'. One side section 4 is designed so as to enclose the central section 3 and the short side part 12 of said side section 4 is in contact with the corresponding short side part 8 of central section 3 via sealings. At the open end the 10 roof part 11 of the side section 4 is formed with a sealing 19 which in the expanded state is sealing against the right hand end 20 of the central section as illustrated in the drawing. The opposite side section 5, in turn, is adapted to likewise sealingly engage the short side part 8 of the central section, 15 and in the expanded state to sealingly engage an upright edge 21 on the opposite end of the central section 3 via a sealing 22. The floor parts 10 and 10' respectively of the side sections 4 and 5 are by means of hinges 23 or corresponding means rotatably mounted at the bottom 6 of the central section 3 or can be 20 connected to the bottom so that the floor parts 10, 10' in their fold down positions are mounted to the bottom 6 thereby providing a plane, smooth upper surface on which the side sections 4 and 5 can slide while pulling said sections out in opposite directions from the central section 3.

25 In order to simplify the handling and the mounting of the house structure a simple winch means can be utilized as illustrated in figure 9. The winch device comprises a conventional hand winch 24 which can be releasably mounted on the roof part 11' of the outer side section 5 and which by wires 25 30 is connected to the outer ends 26 of the floor parts 10 and 10'. By a suitable coupling the same wires 25 or other wires can be used for pulling out the side sections 4 and 5 from the central section 3 with the aid of the winch 24.

35 As previously mentioned the container house according to the invention can be used both as residences, offices, military buildings, canteens, schools, medical clinics, plants etc. For



permanent or occasional use. Especially for permanent use it is advisable that a separate roof is provided over the central section and the two side sections as indicated with the dotted lines 27 of figure 4. Of course the roof may be formed as a ridge roof, and upon need the roof also can be connected to additional outer walls and/or floors.

In figures 5, 6 and 7 some alternative plans of the house structure are shown. It is obvious to the expert that the plans must be made up so that the side sections 4 and 5 can be moved over the central section 3, whereby no fixed or separate accessories meet each other. It is also obvious that the house structure at a suitable place can be prepared for direct connection with a waterintake or a drainage, electrical connection, telephone connection etc. For the above purposes central and primary service accessories like sanitary installations, electrical installations, drainage conduits and corresponding connections are provided in the central house section which in figure 5 is designed with a service portion including a wet room part 28 (bath room, shower room) and in direct connection thereto a kichen part 29. Preferably the wet room part and the kitchen room part are provided on the opposite sides of a common wall. The house body can be formed with an entrance door 30 at the outer side section 5 in which also a sitting room is provided. For the above mentioned standard dimensions a sitting room in this case may have a size of 15-20 m². In addition to a cloak-room, WC, washing room and kitchen department the central section may have a small bedroom, and the inner side section 4 in turn can be formed with two bedrooms and between two said bedrooms a wardrobe.

Figure 6 shows a planning of the house which temporarily can be used as a medical clinic. The outer side section 5 can be formed with a waiting room, reception and examination room, the central section is formed with WC and a shower room 28' and at the opposite side of a partitian wall there is a dark room 29' and the remaining portion of the central section and the innerside section 4 can be formed with laboratories and



examination, rooms etc.

In figure 7 there an alternatively planning is shown suited as a canteen or a school, whereby the central section is formed with WC etc. 28' and the inner side section 4 adjacent to the wet 5 room part 28" if formed with a kitchen part 29".

When compressing the house for renewed transportation of a ready made house structure the separate furniture and installations preferably are moved into the central section 3 whereupon the two side sections 4 and 5 without damaging fixed or 10 separate furniture or installations can be moved over the central section, whereupon the floor parts 10 and 10' are fold up and are secured at the long sides of the side sections. Thereby a well protected expandable house pack is obtained which can easily be handled by means of a fork truck, hoising apparatus etc. and can 15 be transported on vehicles, on boats, on airplanes etc.

It is to be understood that the above specification and the embodiments of the invention illustrated in the drawings are only of exemplifying nature and that many different modifications may be presented within the scope of the appended claims.

20



- 1 house structure
- 2 lorry
- 3 central house section
- 4 side section
- 5 side section
- 6 bottom part (of 3)
- 7 roof part
- 8 short side part.
- 9 door
- 10 floor part (of 4, 5)
- 11 roof part
- 12 short side part
- 13 long side part
- 14 window
- 15 door
- 16 bar
- 17 long side wall (of 3)
- 18 sealing
- 19 sealing
- 20 right end (of 3)
- 21 upright edge
- 22 sealing
- 23 hinge
- 24 winch
- 25 wires
- 26 outer end (of 10, 10')
- 27 separate roof
- 28 wet room part
- 29 kitchen part
- 30 entrance door



CLAIMS

1. Container type apparatus for use as a house structure and comprising bottom, side walls and roof and made up of three
5 house sections (3, 4, 5) which can be moved into each other telescopically, characterized in that the three container house sections comprises a central main section (3) comprises service function equipment, like kitchen, bath and other sanitary installations, central electric installations, and
10 two side sections (4, 5) each comprising floor (10), roof (11) and three side walls (12, 13) and provided on opposite sides of the central main section (3), and whereby the open side of one side section (4) in the compressed state is adapted to enclose the central main section (3), whereas the second side section (5)
15 in the compressed state with the open side thereof is adapted to enclose both the central main section (3) and the said first mentioned side section (4), and whereby the two side sections (4, 5) together with the bottom of the central main section (3) in
20 the compressed state of the container house provides a compact, well interconnected house pack.

2. Container house according to claim 1, characterized in that the floor (10, 10') of each side section (4, 5) is separate from the unit including walls (12, 13) and roof and are designed for being connected to the central main section (3) and in the compressed state of the container housing to be fold up against the outer sides of the side sections (4, 5) thereby providing a preferably smooth protecting outer surface of the house pack.

3. Container house according to claim 1 or 2, characterized in that the inner (4) of the two side sections at the open end thereof is formed with a sealing (19) which in the ready mounted state of the container house is adapted to sealingly engage a corresponding shoulder (20) of the central main section (3) and in that the second side section (5) at the open end thereof is formed with a sealing (22) adapted to sealingly engage, in the ready mounted state of the container



house, and upright edges (21) extending round the corresponding end of the central main section (3).

4. Container house according to claim 1, 2 or 3, characterized in that the central main section (3) provides a solid unit comprising a supporting bottom (6) two short sides (8) fixed mounted to the bottom and a roof (7) fixed mounted to the short sides (8), whereby the central main section (3) is substantially open at the two opposite long sides.

5. Container house according to claim 4, characterized in that the floor parts (10, 10') of the two side sections (4, 5), in the ready mounted container house, are directly connected to the supporting bottom (6) of the central section (3) and extends on the same level as the said central section bottom (6).

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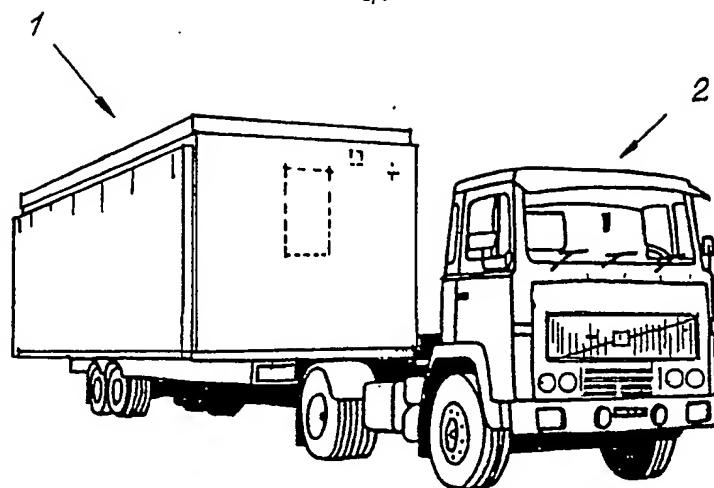


FIG. 1

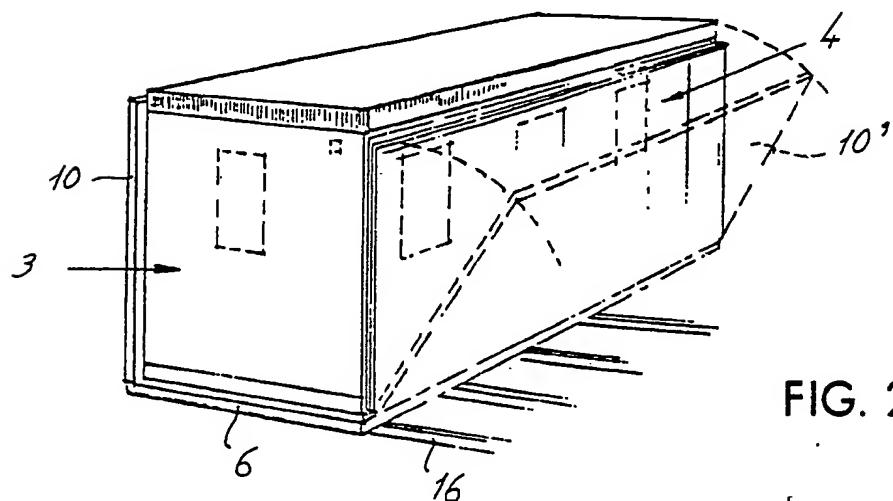


FIG. 2

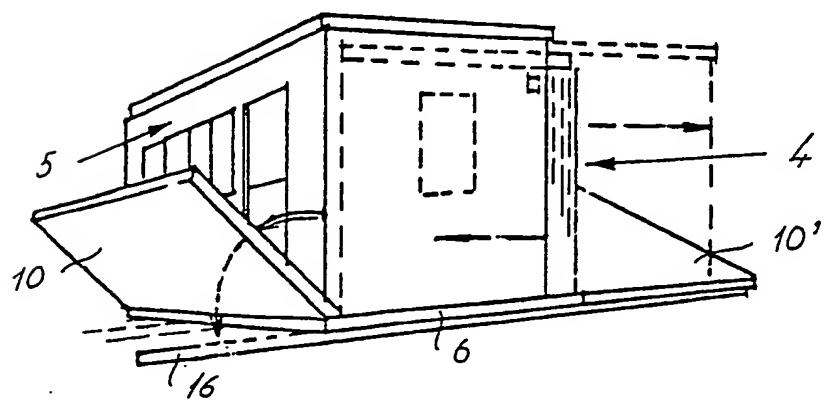


FIG. 3

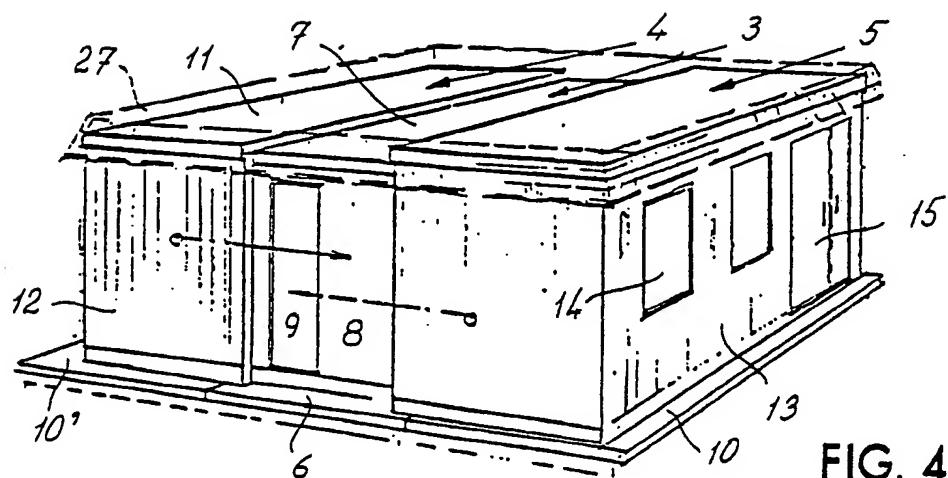


FIG. 4

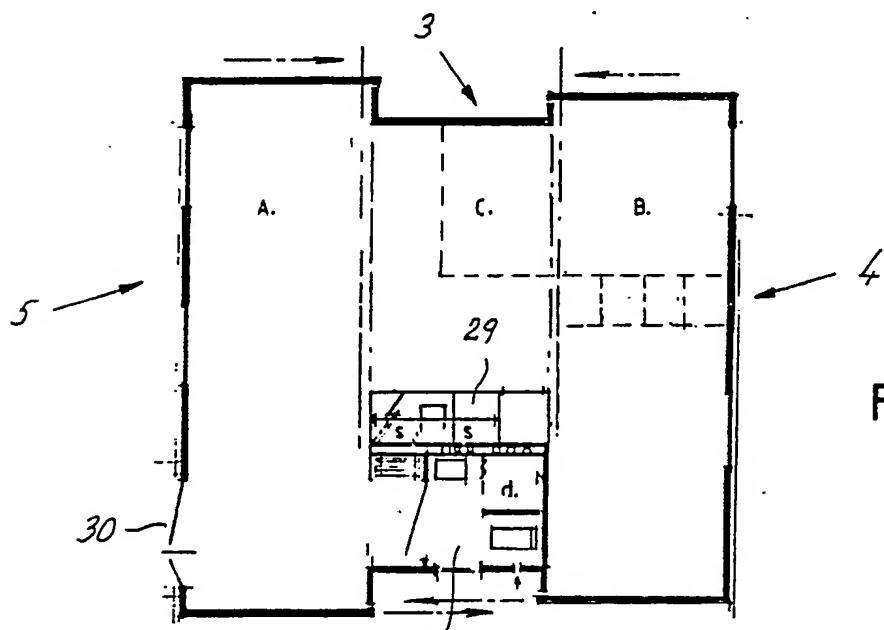


FIG. 5

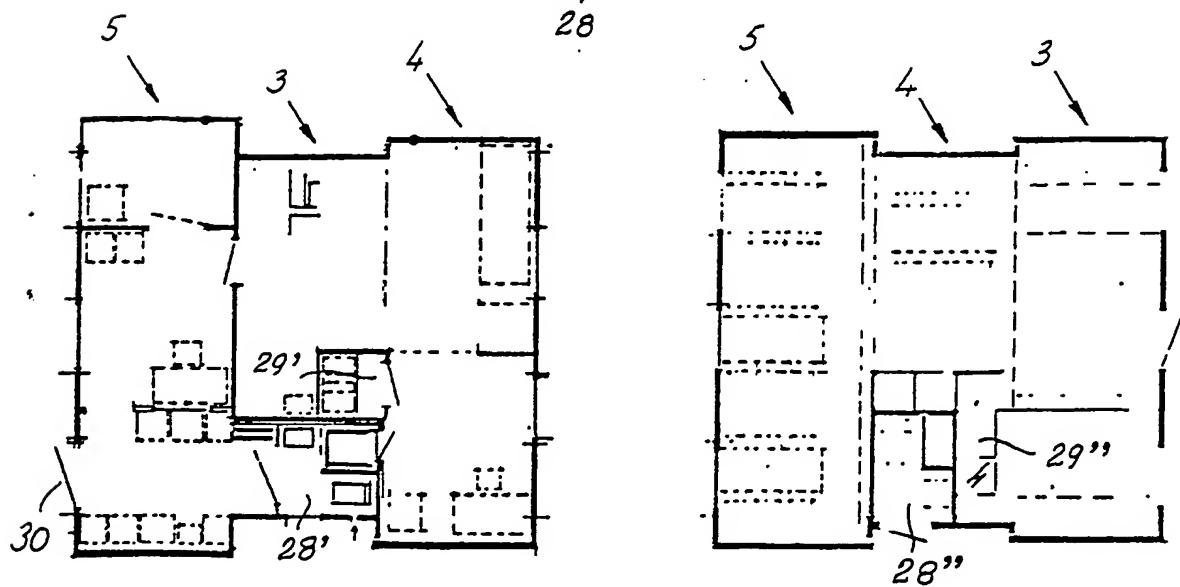


FIG. 6

FIG. 7

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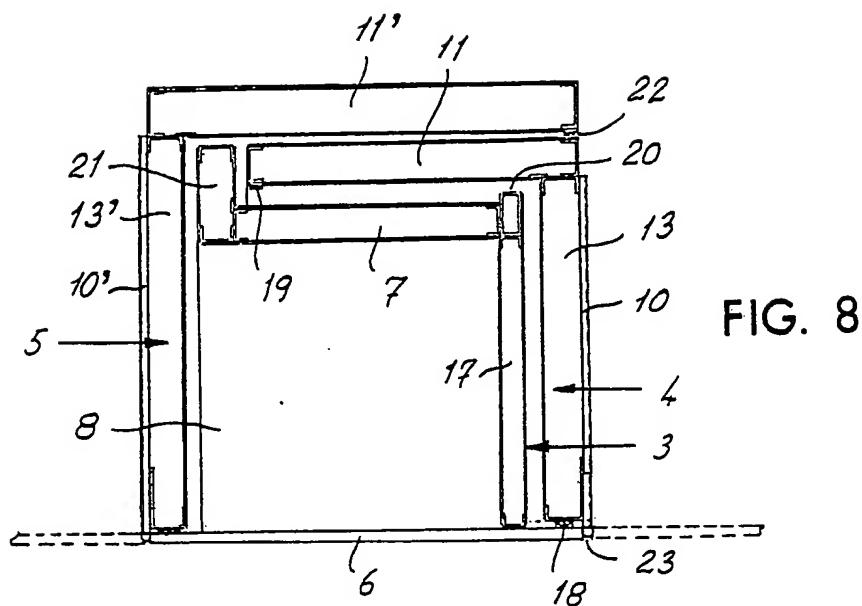


FIG. 8

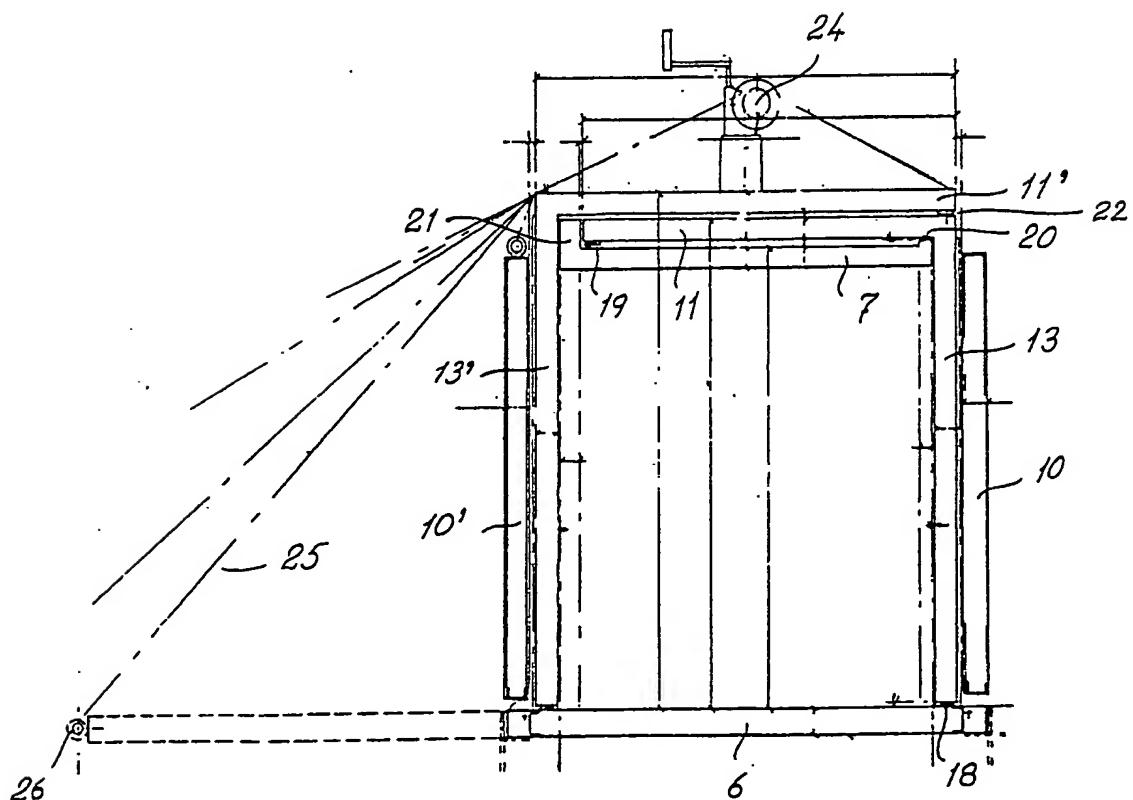


FIG. 9

INTERNATIONAL SEARCH REPORT

International Application No. PCT/SE82/00378

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ¹

According to International Patent Classification (IPC) or to both National Classification and IPC ²

E 04 B 1/343

II. FIELDS SEARCHED

Minimum Documentation Searched ⁴

Classification System	Classification Symbols
IPC 3	E 04 B 1/343, 344; E 04 H 1/02
US Cl	52:69-71, 745

Documentation Searched other than Minimum Documentation
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SE, NO, DK, FI classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁶

Date: y ⁸	Citation of Document, ¹⁴ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
A	AU, B1, 510 356 (HALES R D ET AL) 22 June 1978	
A	CH, A, 440 665 (VITTOZ J) 29 December 1967	3 - 5
A	DE, A1, 2 803 054 (HALLMATIC GmbH) 3 August 1978	
A	EP, A3, 0 039 254 (VECO SOCIETE à RESPONSABILITE LIMITEE) 17 February 1982	3 - 5
A	FR, A1, 2 296 738 (DANIELFY T) 30 July 1976	1, 3, 4
A	DK, B, 136 987 (SØNDERBERG J) 27 December 1977	2, 5
T	SE, A, 8 103 026-4 (LINDHOLM J R ET AL) 15 November 1982	1 - 5
A	US, A, 3 719 386 (PUCKETT R ET AL) 6 March 1973	3 - 5

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²⁶ "&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search ⁹

1983-06-13

Date of Mailing of this International Search Report ¹⁰

1983-06-16

International Searching Authority ¹¹

Swedish Patent Office

Signature of Authorized Officer ¹²


Ingegerd Hedlund

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